

**AMENDMENTS TO THE CLAIMS**

The following listing of claims replaces all prior versions and listings of claims in the above-referenced application:

1           1.-3. (Canceled)

1           4. (Currently amended)     A module for converting an optical signal to  
2 a digital signal comprising:

3           an optical filter passing a filtered signal comprising a select range of  
4 frequencies present in an optical signal;

5           a photodiode converting the optical signal to a current;

6           a transimpedance amplifier converting the photodiode current to a voltage at  
7 an output of the transimpedance amplifier;

8           a sawtooth generator producing a sawtooth wave, the sawtooth wave having a  
9 first segment with a non-varying positive slope and a second segment adjacent to the  
10 first segment, the second segment having a negative slope, wherein the magnitude of  
11 the slope of the second segment is greater than the magnitude of the slope of the first  
12 segment;

13          ~~an externally generated~~ a synchronization input coupled to the sawtooth  
14 generator ~~such that the sawtooth wave is synchronized to an external signal;~~ and

15          a comparator directly coupled to the output of the transimpedance amplifier  
16 and arranged to receive the sawtooth wave, the comparator comparing the sawtooth  
17 wave with the output of the transimpedance amplifier in accordance with the  
18 synchronization input to produce a pulse-width modulated digital output.

1           5.-9. (Canceled)

1           10.     (Currently amended)     A method of converting the intensity of an  
2     optical source to a pulse-width modulation signal in a single integrated circuit  
3     comprising:

4           filtering incident light from the optical source such that wavelengths of visible  
5     light impinge a sensor sensitive to a select range of wavelengths, wherein the select  
6     range of wavelengths is associated with one of red, green and blue light;

7           converting the select range of wavelengths of visible light to a current;

8           converting the current to a voltage;

9           generating a sawtooth wave, the sawtooth wave having a first segment with a  
10     non-varying positive slope and a second segment adjacent to the first segment, the  
11     second segment having a negative slope, wherein the magnitude of the slope of the  
12     second segment is greater than the magnitude of the slope of the first segment  
13     ~~synchronized to an external signal~~; and

14           comparing the sawtooth wave to the voltage ~~without inverting the voltage~~  
15     representing the select range of wavelengths of visible light to produce a digital pulse-  
16     width modulated output, wherein the steps of converting the current, generating and  
17     comparing are accomplished in a single integrated circuit.

1           11.-12.     (Canceled)

1           13.     (Currently amended)     An apparatus for converting light to a digital  
2     signal comprising:

3           a single module comprising a ground pin, a single supply pin, a  
4     synchronization pin and an output pin, the module further comprising:

5           an optical filter passing a filtered signal comprising a select range of  
6     frequencies associated with one of red, green and blue light present in an  
7     optical signal;

8           a photodiode configured to convert incident light to a current;

9           a transimpedance amplifier configured to convert the current to a  
10     voltage;

11           a sawtooth generator configured to produce a sawtooth wave  
12     responsive to ~~an external~~ a synchronization signal provided via the

13        synchronization pin, the sawtooth wave having a first segment with a non-  
14        varying positive slope and a second segment adjacent to the first segment, the  
15        second segment having a negative slope, wherein the magnitude of the slope  
16        of the second segment is greater than the magnitude of the slope of the first  
17        segment; and  
18                a comparator configured to receive the sawtooth wave and the voltage  
19        to produce a pulse-width modulated digital output, wherein an output of the  
20        transimpedance amplifier is directly applied to an input of the comparator.

1            14.        (Previously presented)    The integrated circuit of Claim 13 where the  
2        module further comprises a single substrate.

1            15.        (Previously presented)    The integrated circuit of Claim 14 where the  
2        transimpedance amplifier, sawtooth generator, and comparator are implemented on  
3        the single substrate.

1            16. – 17.        (Canceled)